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### Commercial Standard 167-50

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# Automotive and General Service Copper Tube

U. S. DEPARTMENT OF COMMERCE



#### U. S. DEPARTMENT OF COMMERCE

Charles Sawyer, Secretary

#### NATIONAL BUREAU OF STANDARDS

E. U. Condon, Director



## Automotive and General Service Copper Tube

A Recorded Voluntary Standard of the Trade

### **COMMODITY STANDARDS**

Simplified Practice Recommendations and Commercial Standards are developed by manufacturers, distributors, and users in cooperation with the Commodity Standards Division of the National Bureau of Standards. The purpose of Simplified Practice Recommendations is to eliminate avoidable waste through the establishment of standards of practice for stock sizes and varieties of specific commodities that currently are in general production and demand. The purpose of Commercial Standards is to establish standard methods of test, rating, certification, and labeling of commodities, and to provide uniform bases for fair competition.

The adoption and use of a Simplified Practice Recommendation or Commercial Standard is voluntary. However, when reference to a Commercial Standard is made in contracts, labels, invoices, or advertising literature, the provisions of the standard are enforceable through usual legal channels as a part of the sales contract.

A Simplified Practice Recommendation or Commercial Standard originates with the proponent industry. The sponsors may be manufacturers, distributors, or users of the specific product. One of these three elements of industry submits to the Commodity Standards Division the necessary data to be used as the basis for developing a standard of practice. The Division, by means of assembled conferences or letter referenda, or both, assists the sponsor group in arriving at a tentative standard of practice and thereafter refers it to the other elements of the same industry for approval or for constructive criticism that will be helpful in making any necessary adjustments. The regular procedure of the Division assures continuous servicing of each effective Simplified Practice Recommendation and Commercial Standard, through review and revision, whenever, in the opinion of the industry, changing conditions warrant such action. Simplified Practice Recommendations and Commercial Standards are printed and made available by the Department of Commerce through the Government Printing Office.

#### COMMERCIAL STANDARD 167-50

for

## AUTOMOTIVE AND GENERAL SERVICE COPPER TUBE

[Effective May 10, 1950]

#### 1. PURPOSE

1.1 The purpose of this commercial standard is to provide a nationally recognized standard of quality and standard sizes for automotive and general service copper tube. Its general adoption and use will serve to promote fair marketing practices and bring about a better understanding between manufacturers, distributors, and users of the product.

2. SCOPE

2.1 This standard provides minimum requirements for eight standard sizes of seamless annealed copper tube manufactured in conformance with ASTM Specification B68, for automotive and general service purposes, in sizes ranging from ½ inch to ¾ inch in outside diameter. It covers temper, manufacture, chemical composition, tensile properties, workmanship and finish, dimensions, weights, and tolerances. It also includes methods of test and packing, and a recommended statement for indicating compliance with the standard.

#### 3. DEFINITION

3.1 The term "automotive and general service copper tube" applies only to tube intended for use in the field for repairs and alterations.

#### 4. GENERAL REQUIREMENTS

4.1 Temper.—Tube covered by this standard shall be furnished in the soft-annealed temper.

4.2 Manufacture.—The tube shall be made from copper of any one of the three following types:

Type DLP—Phosphorized copper, low residual phosphorus.
Type DHP—Phosphorized copper, high residual phosphorus.
Type OF—Oxygen-free copper without residual metallic deox-

idants.
4.2.1 The tube shall be bright-annealed after coiling.

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Chemical composition.—The material shall conform to the chemical requirements given in table 1.

Table 1. Chemical composition of copper tube

|  | Type DLP                  | Type DHP                  | Type OF |
|--|---------------------------|---------------------------|---------|
| Copper, percent, min  Phosphorus, percent min  max | 99. 90<br>0. 004<br>. 012 | 99. 90<br>0. 015<br>. 040 | 99. 92  |

<sup>1</sup> Silver counted as copper.

Tensile properties.—The material shall conform to the following requirements as to tensile properties:

Tensile strength, minimum—30,000 pounds per square inch.

Elongation in 2 inches, minimum—40 percent.

4.5 Workmanship and finish.—The finished tube shall be smooth, free from internal and external mechanical imperfections, and shall have a clean, bright appearance.

#### 5. SIZES

5.1 The standard tube sizes, outside diameter, wall thickness, weights, and tolerances on wall thickness and average outside diameter are as shown in table 2.

Table 2. Standard sizes, dimensions, weights, and tolerances for automotive and general service copper tube

|                        | 1 1                           | Wall thickness | Weight<br>per foot | Tolerances                                     |   |
|------------------------|-------------------------------|----------------|--------------------|--|---|
| Nominal<br>size        | Actual<br>outside<br>diameter |                |                    | Wall<br>thickness <sup>1</sup>                 | Average<br>outside<br>diameter <sup>2</sup> |
| Inch 1/8 3/16 1/4 5/16 | Inch                          | Inch           | Pound              | Inch   | Inch  |
|                        | 0. 125                        | 0. 030         | 0.035              | ±0.003   | ±0.002                                      |
|                        | . 188                         | . 030          | .058               | ±.0025   | ±.002                                       |
|                        | . 250                         | . 030          | .080               | ±.0025   | ±.002                                       |
|                        | . 312                         | . 032          | .109               | ±.0025   | ±.002                                       |
| 3/8                    | . 375                         | . 032          | . 134              | $\pm .0025$ $\pm .0025$ $\pm .003$ $\pm .0035$ | ±. 002                                      |
| 1/2                    | . 500                         | . 032          | . 182              |  | ±. 002                                      |
| 5/8                    | . 625                         | . 035          | . 251              |  | ±. 002                                      |
| 3/4                    | . 750                         | . 035          | . 305              |  | ±. 0025                                     |

The tolerances listed represent the maximum deviation at any point.

5.2 Length.—The standard length for coils of automotive and general service copper tube shall be 25 feet, with a tolerance of plus 12 inches and minus 0 inch.

#### 6. METHODS OF TEST

6.1 Tube conforming to this commercial standard shall meet all applicable tests in "Standard Specification for Seamless Copper Tubing, Bright Annealed," ASTM Designation B68.

<sup>&</sup>lt;sup>2</sup> The average outside diameter is the average of the maximum and minimum outside diameters as determined at any one cross section of the tube.

#### 7. PACKING

7.1 Standard automotive and general service copper tube shall be packed in such a manner as to prevent damage in ordinary handling and transportation.

#### 8. IDENTIFICATION

8.1 In order to assure the purchaser that he is receiving tube that complies with the standard requirements set forth herein, it is recommended that automotive and general service copper tube manufactured to conform to such requirements be identified by a sticker, tag, or other label attached to the package, wrapping, or tube itself, carrying the following statement:

This tube meets the requirements of Commercial Standard CS167-50, as developed by the industry and trade under the procedure of the National Bureau of Standards, and issued by the United States Department of Commerce.

#### Or, more briefly—

Conforms to CS167-50, as developed by the industry and trade, and issued by the U.S. Department of Commerce.

#### 9. EFFECTIVE DATE

9.1 Having been passed through the regular procedure of the Commodity Standards Division, and approved by the acceptors hereinafter listed, this commercial standard was issued by the United States Department of Commerce, effective from May 10, 1950.

> Edwin W. Ely, Chief, Commodity Standards Division.

#### HISTORY OF PROJECT

On June 19, 1947, the Copper & Brass Research Association, on behalf of manufacturers of copper tube, requested the cooperation of the National Bureau of Standards in the establishment of a commercial standard for automotive and general service copper tube. product is intended for use in the field for repairs and alterations.

A draft of a proposed commercial standard for automotive and general service copper tube was prepared, and circulated on May 28, 1948, to manufacturers, distributors, and users for consideration and acceptance. Some valuable comments and suggestions resulted from this circularization.

On September 30, 1949, the recommended standard, adjusted in accordance with the constructive suggestions received, was recirculated to the industry and trade. Written acceptances estimated to represent adequate support having been received, an announcement was issued on April 10, 1950, that the standard, designated CS167-50, would become effective for new production from May 10, 1950.

Project Manager: George E. Umhau, Commodity Standards Division, National

Bureau of Standards.

Technical Adviser: Dr. William G. Brombacher, Mechanics Division, National Bureau of Standards.

#### STANDING COMMITTEE

The following individuals comprise the membership of the standing committee, which is to review, prior to circulation for acceptance, revisions proposed to keep the standard abreast of progress. Comment concerning the standard and suggestions for revisions may be addressed to any member of the committee or to the Commodity Standards Division, National Bureau of Standards, which acts as secretary for the committee.

S. H. Perry, Chase Brass & Copper Co., Inc., 260 Grand Street, Waterbury 20, Conn. (Chairman).

Wylie Brown, Phelps Dodge Copper Products Corp., 40 Wall Street, New York

5, N. Y. Y. Bassett, Wolverine Tube Division, Calumet & Hecla Consolidated Copper Co., Inc., 1411 Central Avenue, Detroit 9, Mich.

Jack Dorman, Dorman Products Co., 1004 Sycamore Street, Cincinnati, Ohio.

M. Notton, Seaboard Sales Co., 263 Cambridge Street, Allston, Mass.

G. L. McCain, Chrysler Corp., 341 Massachusetts Avenue, Detroit 31, Mich.

A. L. Treitman, American Motor Specialties Co., 53 Lock Street, Newark 4, N. J.

Frank G. Stewart, Standard Automotive Supply Co., 1835 Fourteenth Street NW., Washington 9, D. C.

#### ACCEPTANCE OF COMMERCIAL STANDARD

If acceptance has not previously been filed, this sheet properly filled in, signed and returned will provide for the recording of your organization as an acceptor of this commercial standard.

|  | 1  | )ate                  |           |  |
|--|--|-----------------------|-----------|--|
| Commodity Star<br>National Bureau<br>Washington 25,  | ı of Standards,  |                       |           |  |
| Gentlemen:   |  |                       |           |  |
|  | nat the Commercial S<br>of practice, and we in<br>e in the |                       |           |  |
| production 1   | distribution <sup>1</sup>                                  | purchase <sup>1</sup> | testing 1 |  |
| of automotive and general service copper tube.   |  |                       |           |  |
| We reserve the right to depart from it as we deem advisable.   |  |                       |           |  |
| We understand, of course, that only those articles which actually comply with the standard in all respects can be identified or labeled as conforming thereto. |  |                       |           |  |
| Signature of auti  | horized officer  | (In ink)              |           |  |
|  | (Kindly typewrite or print the                             | he following lines)   |           |  |
| Name and title o   | of above officer   |                       | <b></b>   |  |
| Organization(Fill in exactly as it should be listed)   |  |                       |           |  |
| Street address   |  |                       |           |  |
| City, zone, and S  | State  |                       |           |  |
| <sup>1</sup> Underscore which one. Please see that separate acceptances are filed for all subsidiary companies and   |  |                       |           |  |

<sup>&</sup>lt;sup>1</sup> Underscore which one. Please see that separate acceptances are filed for all subsidiary companies and affiliates which should be listed separately as acceptors. In the case of related interests, trade associations, trade papers, etc., desiring to record their general support, the words "General Support" should be added after the signature.

#### TO THE ACCEPTOR

The following statements answer the usual questions arising in con-

nection with the acceptance and its significance:

1. Enforcement.—Commercial standards are commodity specifications voluntarily established by mutual consent of those concerned. They present a common basis of understanding between the producer, distributor, and consumer and should not be confused with any plan of governmental regulation or control. The United States Department of Commerce has no regulatory power in the enforcement of their provisions, but since they represent the will of the interested groups as a whole, their provisions through usage soon become established as trade customs, and are made effective through incorporation into sales contracts by means of labels, invoices, and the like.

2. The acceptor's responsibility.—The purpose of commercial standards is to establish for specific commodities, nationally recognized grades or consumer criteria, and the benefits therefrom will be measurable in direct proportion to their general recognition and actual use. Instances will occur when it may be necessary to deviate from the standard and the signing of an acceptance does not preclude such departures; however, such signature indicates an intention to follow the commercial standard, where practicable, in the production, distribu-

tion, or consumption of the article in question.

3. The Department's responsibility.—The major function performed by the Department of Commerce in the voluntary establishment of commercial standards on a Nation-wide basis is fourfold: first, to act as an unbiased coordinator to bring all interested parties together for the mutually satisfactory adjustment of trade standards; second, to supply such assistance and advice as past experience with similar programs may suggest; third, to canvass and record the extent of acceptance and adherence to the standard on the part of producers, distributors, and users; and fourth, after acceptance, to publish and promulgate the standard for the information and guidance of buyers and sellers of the commodity.

4. Announcement and promulgation.—When the standard has been endorsed by a satisfactory majority of production or consumption in the absence of active valid opposition, the success of the project is announced. If, however, in the opinion of the Standing Committee or of the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and

publication.

#### ACCEPTORS

The organizations listed below have individually accepted this standard for use as far as practicable in the production, distribution, testing, or purchase of automotive and general service copper tube. In accepting the standard they reserved the right to depart from it as they individually deem advisable. expected that products which actually comply with the requirements of this standard in all respects will be regularly identified or labeled as conforming thereto, and that purchasers will require such specific evidence of conformity.

#### ASSOCIATIONS (General Support)

American Automobile Association, Washington, D. C.

FIRMS AND OTHER INTERESTS Ameo Corp., Detroit, Mich.
American Motor Specialties Co., Newark, N. J.
Antrim Hardware Co., Camden, N. J.
Atchison, Topeka & Santa Fe Railway, Chicago, Ill.
Ballou & Wright, Portland, Oreg.
Barker, Rose & Kimball, Inc., Elmira, N. Y.
Beard & Stone Electric Co., Inc., Houston, Tex.
Bluefield Supply Co., Bluefield, W. Va.
Bowman Products Co., Cleveland, Ohio.
Bridgeport Brass Co., Bridgeport, Conn.
Canton Hardware Co., Canton, Qhio.
Central of Georgia Railway Co., Savannah, Ga.
Chase Brass & Copper Co., Inc., Waterbury, Conn.
Chrysler Corp., Engineering Division, Detroit,
Mich. Mich. Columbia Supply Co., Columbia, S. C. Corbin Supply Co., Macon, Ga. Crosley Division, Avco Manufacturing Corp., Cin-cinnati, Ohio. Crosley Division, Aveo Manufacturing Corp., Cincinnati, Ohio.
Crump, B. T., Co., Inc., Richmond, Va.
Danville Auto Parts Co., Danville, Ill.
Darrow & Comstock Co., Inc., New London, Conn.
Denver Gear & Parts Co., Denver, Colo.
Detroit, University of, Detroit, Mich.
Dorman Products, Inc., Cincinnati, Ohio.
Eric Concrete & Steel Supply Co., Eric, Pa.
Evansville Auto Parts, Inc., Evansville, Ind.
Evansville Supply Co., Evansville, Ind.
Evansville Supply Co., Evansville, Ind.
Farmer, C. W., Co., Macon, Ga.
Ford, Bob, Inc., Dearborn, Mich.
Foss, W. J., Co., Springfield, Mass.
Gabriel Sales Co., Inc., Cicero, Ill.
Garnich, E., & Sons Hardware Co., Ashland, Wis.
Gefro Supply, Inc., West New York, N. J.
Globe Machinery & Supply Co., Des Moines, Iowa.
Good Supply & Equipment Co., Akron, Ohio.
Grand Forks Supply Corp., Grand Forks, N. Dak.
Grand Homan Auto Parts Co., Chicago, Ill.
Handy, N. B., Co., Lynchburg, Va.
Heller, J., & Sons, Newark, N. J.
Howard Supply Co., Urbana, Ohio.
Hubbard, S. B., Co., Jacksonville, Fla.
Hudson-Tucker, Inc., San Diego, Calif.
Industrial Equipment Co., Louisville, Ky.
Janney Semple Hill & Co., Minneapolis, Minn.
Kauffman Manufacturing & Supply Co., Hagerstown, Md.
Kester Machinery Co., Winston-Salem, N. C. Kauffman Manufacturing & Supply Co., Hagerstown, Md.
Kester Machinery Co., Winston-Salem, N. C.
Kinscy, H. P., Co., Easton, Pa.
Kries, Henry A., & Sons Co., Baltimore, Md.
Kugel Bros., Philadelphia, Pa.
Laffan, Frank E., Co., Rochester, N. Y.
Lane, Harry, Supply Co., Inc., McPherson, Kans.
Larson Hardware Co., Sioux Falls, S. Dak.
Lewin-Mathes Co., St. Louis, Mo.
Lindcrme Tube Co., Cleveland, Ohio.
Lowell Iron & Steel Co., Lowell, Mass.
Lubbock Hardware & Supply Co., Lubbock, Tex.
Luzerne & Lackawanna Supply Co., Wilkes-Barre,
Pa.

MacKenzie Auto Equipment, Inc., Pocatello, Idaho. Marine Specialty & Mill Supply Co., Inc., New Orleans, La. Marsden & Wasserman, Inc., Hartford, Conn.

Marshall Newell Supply Co., San Francisco, Calif. Marwedel, C. W., San Francisco, Calif. McDonald Auto Supply Co., Amarillo, Tex. McGowin-Lyons Hardware & Supply Co., Mobile, Ala.

Messer, L. J., Co., Lincoln, Nebr.
Miller Bros. Hardware Co., Richmond, Ind.
Monmouth Products Division, Cleveland Graphite
Bronze Co., Cleveland, Ohio.
Morley Bros., Saginaw, Mich.
Motor Grinding & Parts Co., Milwaukee, Wis.
Motor Parts & Supply Co., Inc., Mobile, Ala.
Motor Supply Co., Inc., Monroe, La.
Mueller Brass Co., Port Huron, Mich.
Muskegon Reliable Tire & Accessories Co., Muskegon. Mich. Messer, L. J., Co., Lincoln, Nebr.

Negon, Mich. Nicols, Dean & Gregg, St. Paul, Minn. Northern Hardware & Supply Co., Menominee,

Northern Supply Co., Bay City, Mich Ohio Auto Supply Co., Cleveland, Ohio. Patterson Bros., New York, N. Y. Penn Brass & Copper Co., Erie, Pa. Pesco Products Division, Borg-Warner Corp., Cleveland, Ohio.

Cleveland, Ohio.
Pidgeon-Thomas Iron Co., Memphis, Tenn.
Pittsburgh Auto Equipment Co., Pittsburgh, Pa.
Reading Tube Corp., Reading, Pa.
Revere Copper & Brass, Inc., New York, N. Y.
Ridge Co., South Bend, Ind.
Rutland Auto Supply Co., Rutland, Vt.
San Antonio Machine & Supply Co., San Antonio,

Tex

Tex.
Sangamo Auto Supply Co., Decatur, Ill.
Schwabacher Hardware Co., Seattle, Wash.
Scovill Manufacturing Co., Waterbury, Conn.
Sears, Roebuck & Co., Chicago, Ill.
Severin Supply Co., Oklahoma City, Okla.
Sheaffer Bros., Carlisle, Pa..
Shriber-Slates Co., Akron, Ohio.
Sipe Auto Parts Co., Somerset, Pa.
Southern Pacific Co., San Francisco, Calif.
Standard Automotive Supply Co., Washington, D. C.

Standard Brass & Manufacturing Co., Houston, Tex. Stangel, J. J., Hardware Co., Manitowoc, Wis. Stauss & Haas, Inc., New Orleans, La. Stevens Institute of Technology, Hoboken, N. J. Stritt & Priebe, Inc., Buffalo, N. Y. Templeton, Charles A., Inc., Waterbury, Conn. Tennessee Mill & Mine Supply Co., Knoxville, Tenn. Tull, J. M., Metal & Supply Co., Inc., Atlanta, Ga. United Hardware & Supply Co., Titusville, Pa. U. S. Testing Co., Inc., Hoboken, N. J. Van Horn, Oliver H., Co., Inc. of Fort Worth, Fort Worth, Tex. Standard Brass & Manufacturing Co., Houston, Tex.

Wolfi, 163. Waite Auto Supply Co., Providence, R. I. Washer Truck Parts Co., Chicago, Ill. Washington Machinery & Supply Co., Spokane,

Wash. Washington, University of, Seattle, Wash.
Wells, A. H., & Co., Inc., Waterbury, Conn.
Whipples Automotive Equipment, Inc., Binghamton, N. Y.
Wolverine Tube Division, Calumet & Heela Con-

solidated Copper Co., Detroit, Mich. Woodbury & Co., Portland, Oreg.

#### UNITED STATES GOVERNMENT

Department of the Army, Standards Branch, Logistics Division, Washington, D. C.

#### COMMERCIAL STANDARDS

CS No. 0-40. Commercial standards and their value to business (third edition) Clinical thermometers (third edition).

2-30. Mopsticks.

3-40. Stoddard solvent (third edition)

4-29. Staple porcelain (all-clay) plumbing fixtures. 5-46. Pipe nipples; brass, copper, steel, and wrought-iron (second edition).

6–31. Wrought-iron pipe nipples (second edition). Superseded by CS5–46.

7-29. Standard weight malleable iron or steel screwed unions. 8-41. Gage blanks (third edition). 9-33. Builders' template hardware (second edi-

tion).

10-29. Brass pipe nipples. Superseded by CS5-46.
 11-41. Moisture regains of cotton yarns (second edition).

12-48. Fuel oils (sixth edition). 13-44. Dress patterns (fourth edition). 14-43. Boys' button-on waists, shirts, junior and sport shirts (made from woven fabrics) (third edition).

15-46. Men's pajama sizes (made from woven fabrics) (third edition).

16-29. Wall paper.

Diamond core drill fittings (fourth edition).

19–32. Foundry patterns of wood (second edition). 20–49. Vitreous china plumbing fixtures (fifth edition)

21-39. Interchangeable ground-glass joints, stopcocks, and stoppers (fourth edition). 22–40. Builders' hardware (nontemplate) (second

edition). 23-30. Feldspar.

24–43. Screw threads and tap-drill sizes.

25-30. Special screw threads. Superseded by CS24-43.

26–30. Aromatic red cedar closet lining. 27–36. Mirrors (second edition). 28–46. Cotton fabric tents, tarpaulins, and covers (second edition).

29-31. Staple seats for water-closet bowls.

30-31. (Withdrawn.)

31–38. Wood shingles (fourth edition).

32-31. Cotton cloth for rubber and pyroxylin coating.

33-43. Knit underwear (exclusive of rayon) (second edition).

Bag, case, and strap leather.

35-49. Hardwood plywood (fourth edition). 36-33. Fourdrinier wire cloth (second edition). 37-31. Steel bone plates and screws.

38-32. Hospital rubber sheeting.

39-37. (Withdrawn).
40-32. Surgeons' rubber gloves.
41-32. Surgeons' latex gloves.
42-49. Structural fiber insulating board (fourth edition)

Grading of sulphonated oils.

44-32. Apple wraps.

45-48. Douglas fir plywood (eighth edition)

46–49. Hosiery lengths and sizes (fourth edition). 47–34. Marking of gold-filled and rolled-gold-plate articles other than watch cases.

48-40. Domestic burners for Pennsylvania anthracite (underfeed type) (second edition)

49-34. Chip board, laminated chip board, and miscellaneous boards for bookbinding purposes.

50-34. Binders board for bookbinding and other purposes.

51-35. Marking articles made of silver in combina-

tion with gold.
52–35. Mohair pile fabrics (100-percent mohair plain velvet, 100-percent mohair plain frieze, and 50-percent mohair plain frieze),

53-35. Colors and finishes for cast stone.

55-35. Mattresses for hospitals. 55-35. Mattresses for institutions. 56-49. Oak flooring (third edition).

CS No.

57-40. Book cloths, buckrams, and impregnated fabrics for bookbinding purposes except library bindings (second edition). 58-36. Woven elastic fabrics for use in overalls (over-

all elastic webbing).

59-44. Textiles—testing and reporting (fourth edition)

60-48. Hardwood dimension lumber (second edition).

61-37. Wood-slat venetian blinds. 62-38. Colors for kitchen accessories

63-38. Colors for bathroom accessories.

64-37. Walnut veneers.

65-43. Methods of analysis and of reporting fiber composition of textile products (second edition)

66-38. Marking of articles made wholly or in part of platinum

67-38. Marking articles made of karat gold.

68-38. Liquid hypochlorite disinfectant, deodorant, and germicide. 69-38. Pine oil disinfectant.

103-36. The oil distinctant (emulsifying type) (second edition) (published with CS-71-41).
 71-41. Phenolic disinfectant (soluble type) (second edition) (published with CS70-41).

72–38. Household insecticide (liquid spray type).
73–48. Old growth Douglas fir, Sitka spruce, and
Western hemlock standard stock doors
(fourth edition).

74–39. Solid hardwood wall paneling. 75–42. Automatic mechanical draft oil burners designed for domestic installations (second edition)

76-39. Hardwood interior trim and molding.

77-48. Enameled cast iron plumbing fixtures (second edition).

78–40. Gound-and-polished lenses for sun glasses (second edition) (published with CS79–40). Polished with CS79–40). Blown, drawn, and dropped lenses for sun glasses (second edition) (published with CS78–40).

80-41. Electric direction signal systems other than semaphore type for commercial and other vehicles subject to special motor vehicle laws (after market).

81-41. Adverse-weather lamps for vehicles (after market)

82-41. Inner-controlled spotlamps for vehicles (after market). 83-41. Clearance, marker, and identification lamps

for vehicles (after market). 84–41. Electric tail lamps for vehicles (after market). 85–41. Electric license-plate lamps for vehicles (after

market)

86-41. Electric stop lamps for vehicles (after market)

87-41. Red electric warning lanterns.

88-41. Liquid burning flares.

89-40. Hardwood stair treads and risers. 90-49. Power cranes and shovels.

91-41. Factory-fitted Douglas fir entrance doors.

92-41. Cedar, cypress, and redwood tank stock lumber.

93-41. Portable electric drills (exclusive of high frequency)

94-41. Calking lead.

95–41. Lead pipe. 96–41. Lead traps and bends. 97-42. Electric supplementary driving and passing

lamps for vehicles (after market).

Artists' oil paints.

99-42. Gas floor furnacesgravity circulating type. 100-47. Porcelain-enameled steel utensils (third edition).

101-43. Flue-connected oil-burning space heaters equipped with vaporizing pot-type burners.

(Reserved for Diesel and fuel-oil engines.) 103-48. Rayon jacquard velour (with or without other decorative yarn) (second edition).

| CS No   | . Item  | CS No   | . Item  |
|---------|---|---------|---|
| 104-49. | Warm-air furnaces equipped with vaporizing  | 137-46. | Size measurements for men's and boys'                                       |
|         | type oil burners (third edition).   |         | shorts (woven fabrics).   |
| 105-48. | Mineral wool insulation for low tempera-  |         | Insect wire screening (second edition).                                     |
|         | tures (second edition).   |         | Work gloves.  |
| 106-44. | Boys' pajama sizes (woven fabrics) (second  |         | Testing and rating convectors.  |
|         | edition).   |         | Sine bars, blocks, plates, and fixtures                                     |
|         | (Withdrawn.)  |         | Automotive lifts.   |
|         | Treading automobile and truck tires.  | 143-47. | Standard strength and extra strength per-                                   |
|         | Solid-fuel-burning forced-air furnaces.   | 144 47  | forated clay pipe.  Formed metal porcelain enameled sanitary                |
| 110-45. | Tire repairs—vulcanized (passenger, truck, and bus tires).                                  | 144-17. | ware.   |
| 111-43. | Earthenware (vitreous-glazed) plumbing  | 145-47. | Testing and rating hand-fired hot-water-                                    |
|         | fixtures.   |         | supply boilers.   |
| 112-43. | Homogeneous fiber wallboard.  | 146-47. | Gowns for hospital patients.  |
| 113-44. | Oil-burning floor furnaces equipped with  |         | Colors for molded urea plastics.  |
|         | vaporizing pot-type burners.  | 148-48. | Men's circular flat and rib knit rayon under-                               |
|         | Hospital sheeting for mattress protection.  |         | wear.   |
|         | Porcelain-enameled tanks for domestic use.  |         | Utility type house dress sizes.   |
|         | Bituminized-fibre drain and sewer pipe.   | 150-48. | Hot-rolled rail steel bars (produced from                                   |
| 117–49. | Mineral wool insulation for heated industrial   |         | tee-section rails).   |
|         | equipment (second edition).   | 151-48. | Body measurements for the sizing of apparel                                 |
| 118-44. | Marking of jewelry and novelties of silver.   |         | for infants, babies, toddlers, and children                                 |
|         | -45.1 Dial indicators (for linear measurements). Standard stock ponderosa pine doors (third | 159 40  | (for the knit underwear industry).<br>Copper naphthenate wood-preservative. |
| 120-48. | edition).   |         | Body measurements for the sizing of apparel                                 |
| 191_45  | Women's slip sizes (woven fabrics).   | 155-48. | for girls (for the knit underwear industry).                                |
|         | Western softwood plywood (second edition).  | 154-    | (Reserved for wire rope).   |
|         | Grading of diamond powder (second edition).   |         | Body measurements for the sizing of boys'                                   |
|         | -45.1 Master disks.   | 100 001 | apparel (knit underwear, shirts, trousers).                                 |
|         | Prefabricated homes (second edition).   | 156-49. | Colors for polystyrene plastics.  |
|         | Tank-mounted air compressors.   |         | Ponderosa pine and sugar pine plywood.                                      |
| 127-45. | Self-contained mechanically refrigerated  |         | Model forms for girls' apparel.   |
|         | drinking water coolers.   | 159-49. | Sun-glass lenses made of ground and polished                                |
| 128-49. | Men's sport shirt sizes—woven fabrics (other  |         | plate glass, thereafter thermally curved.                                   |
|         | than those marked with regular neckband   | 160-49. | Wood-fiber blanket insulation (for building                                 |
|         | sizes) (second edition).  |         | construction).  |
| 129–47. | Materials for safety wearing apparel (second edition).                                      | 161-49. | "Standard grade" hot-dipped galvanized ware.                                |
| 130.46  | Color materials for art education in schools.   |         |   |
|         | Industrial mineral wool products, all types—  | 162-49. | Tufted bedspreads.  |
| 101-40. | testing and reporting.  | 163-49. | Standard stock ponderosa pine windows,                                      |
| 132-46  | Hardware cloth.   |         | sash, and screens.  |
|         | Woven wire netting.   | 164-    | (Reserved for concrete mixers.)   |
|         | Cast aluminum cooking utensils (metal com-  |         | Zinc naphthenate wood-preservative (spray                                   |
|         | position).  | 100-00. | brush, dipapplication).   |
|         | Men's shirt sizes (exclusive of work shirts).   | 100 50  | ,                                     |
| 136-46. | Blankets for hospitals (wool, and wool and  | 166-50. | Size measurements for men's work trousers.                                  |
|         |   |         |   |

<sup>1</sup> Where "(E)" precedes the CS number, it indicates an emergency commercial standard, drafted under war conditions with a view toward early revision.

cotton).

Notice.—Those interested in commercial standards with a view toward accepting them as a basis of everyday practice may secure copies of the above standards, while the supply lasts, by addressing the Commodity Standards Division, National Bureau of Standards, Washington 25, D. C.

167-50. Automotive and general service copper tube.

